Appl. No. 09/845,561
Amdt. dated March 5, 2004
Reply to Office Action of March 1, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the

application:

Listing of Claims:

Please cancel claims 25, 26, 29, and 30 without prejudice.

1.   (original):   A method of modeling phenomena comprising the steps of:

creating a set of tags, each tag controlling one or more aspects of one or more
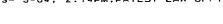
phenomena;

arranging selected members of the set of tags in a desired sequence to produce

phenomena as defined by the sequence of tags; and

processing the tags in order to produce phenomena having the characteristics defined by

the tags.

2.   (original):   The method of claim 1 wherein the phenomena controlled by the

tags are characteristics of speech, wherein the step of arranging selected members of the tags in a

desired sequence comprises placing the selected members of the set of tags into a body of text

and wherein the step of processing the tags comprises processing the body of text and the tags to

produce speech having characteristics defined by the tags.

3.   (original):   The method of claim 2 wherein the characteristics of speech are

prosodic characteristics of speech.

4.   (original):   The method of claim 3 wherein each tag imposes a constraint on

the prosodic characteristics of speech affected by the tag.

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5. (original): The method of claim 4 wherein each of the tags specifies an action to be taken and includes parameters defining attributes and associated values providing information about the action to be taken.

6. (original): The method of claim 5 wherein each of the tags may include a parameter specifying the location at which the tag takes effect.

7. (original): The method of claim 6 wherein the set of tags includes tags which establish settings which remain unchanged until altered by a subsequent tag.

8. (original): The method of claim 7 wherein the set of tags includes members which define the pitch behavior of speech over the course of a phrase.

9. (original): The method of claim 8 wherein the set of tags includes tags defining accents which define the pitch behavior of local influences within a phrase.

10. (original): The method of claim 6 wherein the set of tags includes tags defining phrase boundaries which mark boundaries between regions at which tags have effect.

11. (original): The method of claim 10 wherein a tag which defines a phrase boundary prevents tags following the tag which marks the boundary from influencing speech components preceding the tag which marks the boundary.

12. (original): The method of claim 9 wherein each of the tags may include values defining type and strength in order to define interaction of the tag with other tags.

13. (original): The method of claim 12 wherein a tag may compromise its shape, average pitch or both depending on the value defining type.

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14. (original): The method of claim 8 wherein the step of processing the tags includes establishing a phrase curve by creating and solving equations defined by tags which specify changes in pitch and tags which specify rates of changes in pitch.

15. (original): The method of claim 14 wherein the body of text and the tags are processed one minor phrase at a time.

16. (original): The method of claim 15 wherein processing of a phrase includes using values describing properties prevailing near the end of an immediately preceding phrase.

17. (original): The method of claim 9 wherein the step of processing the tags includes establishing a pitch curve by creating and solving equations defined by tags which specify accents.

18. (original): The method of claim 17 wherein the body of text and the tags are processed one minor phrase at a time.

19. (original): The method of claim 18 wherein processing of a phrase includes using values describing properties prevailing near the end of an immediately preceding phrase.

20. (original): A method of processing a body of text including tags defining prosodic characteristics of speech to be produced by processing the text, comprising the steps of:

extracting the tags from the text;

creating a set of equations defining a phrase curve;

solving the set of equations to produce the phrase curve;

creating a set of equations defining a pitch curve;

solving the set of equations to produce the pitch curve;

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mapping linguistic concepts represented by the phrase curve and the pitch curve to

acoustical observables; and

performing a nonlinear transformation to adjust the prosodic characteristics defined by

tags to human perceptions and expectations.

21.   (original):   A method of defining a set of tags specifying prosodic

characteristics of a target speaker, comprising the steps of:

selecting a body of training text;

receiving speech representing reading of the training text by the target speaker to form a

training corpus;

analyzing the training corpus to identify prosodic characteristics of the training corpus;

and

creating a set of tags defining the identified prosodic characteristics of the training corpus.

22.   (original):   A method of placing tags in text for text to speech processing

comprising the steps of:

placing tags in a body of training text to model prosodic characteristics of a training

corpus produced by reading of the training text;

analyzing the placement of the tags in the training text to develop a set of rules for

placement of tags in text; and

applying the rules to text for which text to speech processing is desired to place tags in

the text in order to produce speech having desired prosodic characteristics.

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23.   (original):   A text to speech system for receiving text inputs comprising text to

be processed to generate speech and tags defining prosodic characteristics of the speech to be

generated, comprising:

a text input interface for receiving the text input;

a speech modeler operative to process the text inputs to produce speech having the

prosodic characteristics specified by the tags; and

a speech output interface for producing the speech output.

24.   (original):   The system of claim 23 wherein the speech modeler is further

operative to process a training corpus representing a reading of text by a target speaker to

produce tags defining prosodic characteristics of the training corpus and use the tags to produce

speech having prosodic characteristics typical of the target speaker.

25.   (canceled)

26.   (canceled)

27.   (original):   The method of claim 2 wherein each tag imposes a constraint on

motion of an articulator used to produce speech.

28.   (original):   The method of claim 1 wherein each tag imposes a constraint on

modeled muscular motions used to simulate gestures or facial expression.

29.   (canceled)

30.   (canceled)

31.   (original):   The method of claim 9 wherein one or more tags are placed within

a proper noun comprising two or more words, each such tag producing prosody indicating to a

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listener that the proper noun is to be interpreted as a single entity rather than as more than one

entity.

32.   (original):   The method of claim 31 wherein the tag produces an increase in

the pitch and speed of speech over the speech affected by the tag.

33.   (original):   The method of claim 9 wherein one or more tags are placed to

produce a word having prosody indicating that the word requires confirmation.

34.   (original):   The method of claim 33 wherein the prosody indicating that the

word requires confirmation is characterized by a relatively high and increasing pitch across the

word requiring confirmation.

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